PROCEDURE 1410.12
Issued January 1, 1994

SUBJECT: Transmission media standards.

APPLICATION: Executive Branch Departments and Sub-units.

PURPOSE: To provide consistency and maximize efficiency in the procurement and use of telecommunications transmission media; i.e., building cable, network services, data networks, public and private inter-city and inter-state facilities.

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SUMMARY: Provides oversight by Telecommunications & Network Management in planning, management and related matters for State use of wiring, cabling, public and private network and other facilities used in transporting electronic information through standardization.

These standards have been developed for:

- Horizontal transmission media.
- Riser transmission media.
- Campus transmission media.
- Inter-connecting hardware.

The standards apply to all State:

- Local area networks.
- Voice systems.
- Video systems.

APPLICABLE FORMS: None.

PROCEDURES:

Applicability:

- All buildings leased or owned, newly constructed, or renovated by the State and occupied by all agencies in the executive branch of State government.

  - All contractors providing design, installation, or maintenance services to any governmental unit identified above.

Scope:

- To properly support the communications needs of the State, the standards accommodate a wide range of uses. The standards provide a workable wiring architecture that takes into account voice, data, video, environmental and security needs. The standards address the requirements common to the greatest number of agencies and personnel. The Standards are to be applied throughout the State, permitting flexibility in the location of employees and departments. To support the State's communications needs, the standards provide:

  - Voice systems support - It is necessary to support the existing SYSTEM 85's, CENTREX, PBX and electronic key systems, plus any new voice communications technology of the future.

  - Data systems support - The State currently uses hardware products from many vendors. To provide continued support, the standards must allow for connectivity between hosts and terminals, and provide support for local area networks, connecting standalone workstations to servers. The standards provide for the inclusion of technologies and transmission speeds not yet developed.

  - Video systems guidelines - Although the State does not have a plan for installing video systems at each building, there are several organizations that are constructing large video networks. The standards must provide guidelines for planning video systems on both the campus and building level.

  - Environmental systems that use telecommunications facilities guidelines - There are many types of environmental control systems, some of which rely upon copper wire for connectivity. Although the needs of these environmental systems typically do not match those of other communications systems, the standards provide guidelines for environmental systems distribution.

  - Security and life safety systems guidelines - Due to the diversity of security systems used throughout the State, and the manner in which they are selected and implemented, the standards cannot adequately address all aspects of security systems. The standards provide connectivity media for security systems distribution and coexistence with other communications systems.

- Building configuration support - The standards are able to operate within the constraints of the buildings currently in use by the State. There is no typical State office building. Buildings in use by the State differ in size, shape, structure, construction material and proximity to other buildings. Some buildings are either new or have been recently renovated and may include drop-tile ceilings and drywall partitions. Most buildings, however, are of older construction using wood, concrete or brick for walls, floors and ceilings. To adequately support the correct State building environment, the standards provide guidelines for the installation of cable in new or renovated buildings, older buildings and campus environments. Within each of these categories, the standards accommodate a diverse mix of building construction methods and materials.

- All applicable standards of the American National Standards Institute (ANSI), Telecommunications Industry Association/Electronic Industries Association (TIA/EIA), and Building Industry Consulting Services International (BICSI) must be followed.

- Electric safety standards support - The standards must first conform to numerous codes and standards established by the electrical safety community. The standards comply with the National Electrical Code (NEC), Chapter 7 (Article 725, 760, and 770) and Chapter 8 and all referenced articles in this chapter, and Federal Communications Commission (FCC) Regulations, Part 68, which deals with communications wiring and components connected to public switched networks.

- Fire protection standards support – All applicable codes and standards as published by the National Fire Protection Association (NFPA) must be followed.

- Wire and communications industry standards support - There are standards set by the wiring and communications industry that must be met to ensure continued support for vendor products. The standards support the Integrated Services Digital Network (ISDN) standard. They also support numerous industry standards and interfaces such as RS-232-C & D, V.35, RS 449, RJ-11, RG-48 (RJ-45), ST and BNC coaxial connectors, all of which involve common interfaces used by most communications equipment vendors.

Objectives:

- The standards provide a distribution plan that can be implemented in almost any State facility. They standardize the various installation techniques, and ensure that each distribution system conforms to a general plan and is not just implemented ad-hoc without regard to the practicality of the system. There are three classes of objectives for the standards: functionality, cost effectiveness and ease of operations. These objectives are defined in the following subsection.

  - Functionality - The standards must provide full functionality with respect to the user applications to be supported. Providing for the State's requirements involves satisfying voice, data and video needs. It must also provide flexibility that will not close out future opportunities and network architectures and the capability to expand and meet new user requirements. To do this, the standards must consider bandwidth and distance limitations as primary factors in choosing an appropriate wiring media.

- Cost - The State has not determined a pre-set cost level for the standards. However, it must provide a wiring solution that is affordable. To properly address cost issues, the standards must be a reasonable balance between cost and functionality by providing the following:

- A wiring solution that addresses the issues of cost versus functionality.

- A wiring solution that will be cost effective to install and maintain.

- A wiring solution that, properly installed, will last 15 to 20 years or more. The standards must provide a strategic direction that moves the State toward constructing buildings that have the technology built in from the very beginning rather than retrofitting buildings to suit the technology requirements.

• Operations - The standards must provide a solution that is easy to install and maintain. In addition to being easy to install and maintain, the standards must provide the following:

  - Control of conduit and wiring closet space.

  - Allow for moves, adds and changes - It is important for the standards to provide a modular wiring architecture. Modularity ensures that the standards will be able to use most vendor products, regardless of termination requirements, and still be able to move equipment from one station to another without having to reconfigure the system.

• Needs - Make available, wherever possible, audio induction loop system for hearing-impaired persons in a minimum of 1 meeting room within a building.

Agencies are to submit requests for transmission media per directives outlined in Procedures 1410.09 through 1410.11.

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